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ABSTRACT

This study examined the educational development of 22 children (ages 2 to 10), under the supervision of the Cochlear Implant Team of the Medical College of Virginia, who had received implants as a result of deafness (in most cases prelingual and congenital) from 6 months to 3 years prior to the study. Data included a review of the children's case files, classroom and clinical observations, and surveys of parents and teachers. Major findings included: primarily oral communication was used by two-thirds of the children post implant (compared to one-third prior to implant); none of the children had a vocabulary comparable to that of peers before the implant but 26 percent did when evaluated after the implant; following the implant, two-thirds were performing on level with peers in mathematics, with one-third on level in reading and related areas; all teachers reported that their expectations of the implant were met or exceeded; observed progress of skills was beyond that of normal developmental progression; and both parents' and teachers' responses indicated overall successful adjustment and satisfaction with the device. A questionnaire is attached which is intended to aid in providing follow-up data on the progress of children receiving implants. (DB)

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EDUCATIONAL PROGRESS PROFILES OF COCHLEAR IMPLANT CHILDREN

Sarah A. Dawson, M.Ed.

Presented at the 1991 Conference of the
American Speech-Language and Hearing Association
November 22, 1991 - Atlanta, Georgia

This Study was a Cooperative Effort Between the
Cochlear Implant Team of the Medical College of Virginia
and the Speech Pathology - Audiology Department of
James Madison University

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Progress Profiles for Cochlear Implant Children

Questions remain about the impact the cochlear implant has on a deaf child's educational development. Our purpose was to report on the progress of academic and/or developmental skills in post-implant children, in an effort to provide an educational profile of expectations for teachers. We had not found this information to be available in current literature. Although the case files reviewed on these students included thorough documentation of auditory skills, language sample analysis, speech-language and developmental testing, much information that would be relevant to a professional providing educational programming for the child was not included.

We studied a sample of 22 children under the supervision of the Cochlear Implant Team of the Medical College of Virginia. These children ranged in age from two to ten years with the majority being prelingually deafened, approximately one half being congenital etiologies and one half post-meningitic. These children were post-implant from 6 months to three years. Two thirds of these children were in self-contained hearing-impaired classrooms, with the remaining one third equally divided in full-time mainstream, part-time mainstream and residential settings. Support services to these children were maintained and increased post-implant. The children had 50 dB HL average difference in Speech Detection Thresholds, with discrimination skills also improving dramatically with training post-implant. Most children in this sample were initially signers, with sign language and cued speech continuing to supplement post-implant. Gradual and variable increases were noted in MLU. Phonemes emerged rapidly with intelligibility remaining somewhat restricted. The Peabody Picture Vocabulary Test indicated an overall reduction in vocabulary deficits. Pragmatic skills were noted to move from paralinguistic to verbal. Developmental testing using the Kaufman and McCarthy batteries indicated a reduction of deficits in sequential processing skills, and bimodal use of simultaneous processing skills.

In our effort to evaluate the educational progress of these students, we examined several approaches to assessment:

1. Review of the children's case files.
2. Classroom and clinical observations of children.
3. Surveys of Parents.
4. Surveys of Teachers.

Of these approaches we found the surveys to provide objective data that was consistent across our sample, and that was highly relevant to the classroom teacher and supporting professionals. We surveyed 22 parents, with 14 responses, and the teachers of those 14 children with 7

responses. Parent and teacher surveys reported similar trends. We have selected several notable data from these surveys for your review:

In the area of communication, we found the primary means of communication in one third of the pre-implant children to be oral, with two-thirds of the post-implant children being primarily oral. The consistency of communication, with more than half of communication opportunities being taken, moved from 40% in the pre-implant children to 93% in the post-implant children. Additionally, 75-100% of communication opportunities were taken by 53% of the post-implant children, and only 7% of the pre-implant children. Communication effectiveness as being clear and usually clear was 13% in the pre-implant children and 93% in the post implant children.

In the area of language, vocabulary comparable to peers or slightly restricted was 0% in the pre-implant children and 26% in the post-implant children. 50-75% Intelligibility to unfamiliar adult listeners was 0% in the pre-implant children and 33% in the post-implant children. 27% of the pre-implant children initiated language by primarily verbal means, while 60% of the post-implant children used verbal skills to initiate language.

Surveys of teachers provided additional information on classroom performance of the post-implant children. In Math and related areas, 2/3 of the children were performing on level with peers, and 1/3 slightly below their peers. In reading and related areas, 1/3 were on level with their peers, 1/3 slightly below, and 1/3 significantly below. Reported academic strengths included mathematics, concrete skills, fine motor skills. Reported academic weaknesses included reading, language comprehension, retention of information, spelling and vocabulary. 67% of these children receive the services of a speech-language pathologist or audiologist 3-5 times per week. 50% of these teachers receive classroom consulting in speech and hearing. 50% of these teachers reported their knowledge to be adequate and thorough, 50% believed their knowledge was weak in some areas. All teachers reported that their expectations of the child's implant had been met or exceeded.

The progress of skills that we observed was beyond that of normal developmental progression. Reductions in language and developmental deficits were noted across our age range, and improvements continued consistently from six months to three years post-implant. The children performing best with the implant seemed to be those that were consistently receiving the most intensive intervention services. Additionally, both parents and teachers provided valuable and insightful observations and comments. Both parents' and teachers' responses indicated overall successful adjustment

and satisfaction with the device and the children's progress.

It is our belief that an assessment similar in form to our survey would be of great benefit in monitoring a child's educational progress and in guiding future goals and programming for the child. We have developed a series of "progress notes" in the form of 15 multiple choice questions that would be completed by professionals, such as the resource specialist, the speech-language pathologist and the educational audiologist, two to three times per year. Similarly, these questions and an additional supplement of seven questions would be given to the classroom teacher. The questions selected include issues of communication and language, as well as socialization, adjustment, frustration, and classroom performance. The progress notes would be used in interdisciplinary staffings, and in determining appropriate goals for the IEP. The notes would provide a convenient means of tracking the child's progress for the child's school file, as well as provide information to the cochlear implant team that is difficult to gather in a clinical assessment. We believe that an instrument to monitor educational progress is a much needed addition to the current assessment battery of the cochlear implant child, and that this format is a time efficient and practical means to provide such information.

PROGRESS NOTES OF COCHLEAR IMPLANT STUDENT: Teacher and Specialists

NAME: CURRENT PLACEMENT:
DATE: MONTHS POST-IMPLANT:
PROFESSIONAL COMPLETING NOTES:

1. The child's primary means of communication:
   A. Oral
   B. Cued Speech
   C. Signed English
   D. American Sign Language

2. The child uses communication:
   A. Very Consistently (75-100%)
   B. Somewhat Consistently (50-75%)
   C. Inconsistently (25-50%)
   D. Rarely (0-25%)

3. Child initiates communication with:
   A. Spoken Words
   B. Vocalizations
   C. Using Established Signs
   D. Using Gestures

4. Child's exercise of communication interaction:
   A. Comments Describe and Clarify
   B. Comments by Labeling
   C. Requests Objects and Actions
   D. Fulfills Needs Only

5. Child communicates with adults:
   A. Very Consistently (75-100%)
   B. Somewhat Consistently (50-75%)
   C. Inconsistently (25-50%)
   D. Rarely (0-25%)

6. Child's speech intelligibility to familiar adult listeners:
   A. 75-100%
   B. 50-75%
   C. 25-50%
   D. 0-25%

7. Child's Intelligibility to unfamiliar adult listeners:
   A. 75-100%
   B. 50-75%
   C. 25-50%
   D. 0-25%

8. Child's vocabulary compared to hearing peers:
   A. Comparable to peers
   B. Slightly Restricted
   C. Somewhat Restricted
   D. Very Restricted

9. Child communicates with peers:
   A. Very Consistently (75-100%)
   B. Somewhat Consistently (50-75%)
   C. Inconsistently (25-50%)
   D. Rarely (0-25%)

10. Overall, compared to hearing peers, I would judge this child's language level:
   A. Equal to His Peers
   B. Mildly Delayed
   C. Moderately Delayed
   D. Severely Delayed

11. Child's Communication Effectiveness:
   A. Clear and Efficient
   B. Usually Clear, Sometimes Labored
   C. Often Clear, Often Labored
   D. Usually Unclear and Labored

12. Child's Incidence of Frustration in Attempts to Communicate:
   A. Occasionally
   B. Sometimes
   C. Often
   D. Always

13. Number of speech-language/auditory therapy per week:
   A. Occasional Classroom Consulting
   B. Frequent Classroom Consulting
   C. 1-2 Sessions
   D. 3-5 Sessions

14. Hours of self-contained setting for hearing impaired per week:
   A. Resource Only
   B. Mainstreamed for Select Academics
   C. Mainstreamed for Non-academics
   D. Full Time Placement

15. Child spends "free time":
   A. 75-100% With Peers
   B. 50-75% With Peers
   C. 25-50% With Peers
   D. 0-25% With Peers

Additional observations you wish to make on the child's progress:

PROGRESS NOTES OF COCHLEAR IMPLANT STUDENT: Teacher Supplement

NAME: DATE:
TEACHER COMPLETING NOTES:

16. Child's need for adult facilitation with peers:
    A. Less Than 25%
    B. 25-50% of Interaction
    C. 50-75% of Interaction
    D. 75-100% of Interaction

17. Child's Peer Choices:
    A. Predominantly Hearing
    B. Hearing and Hearing Impaired
    C. Predominantly Hearing Impaired
    D. No Peer Group

18. Class time demand for child:
    A. Equal to Others
    B. Additional Time Needed Occasionally
    C. Additional Time in Certain Subjects
    D. Much Additional Time Needed

19. This child's reading level:
    A. Above Hearing Peers
    B. Equal to Hearing Peers
    C. Slightly Delayed
    D. Significantly Delayed

20. This child's math level:
    A. Above Hearing Peers
    B. Equal to Hearing Peers
    C. Slightly Delayed
    D. Significantly Delayed

21. Please comment on the child's academic strengths:

22. Please comment on the child's academic weaknesses:

Additional observations you wish to make on the child's progress:

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ASHA 1991 - Atlanta, Georgia

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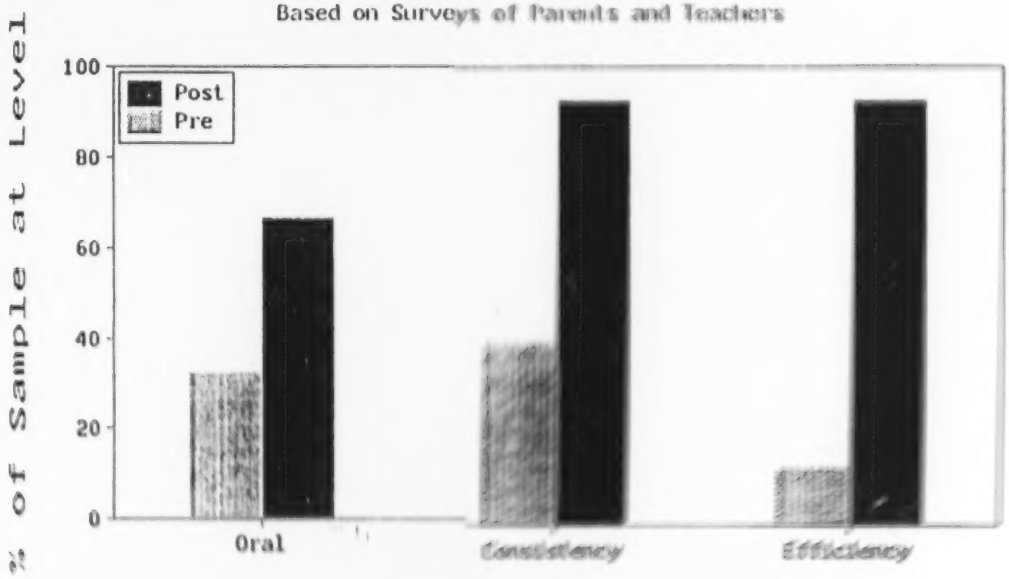
Communication

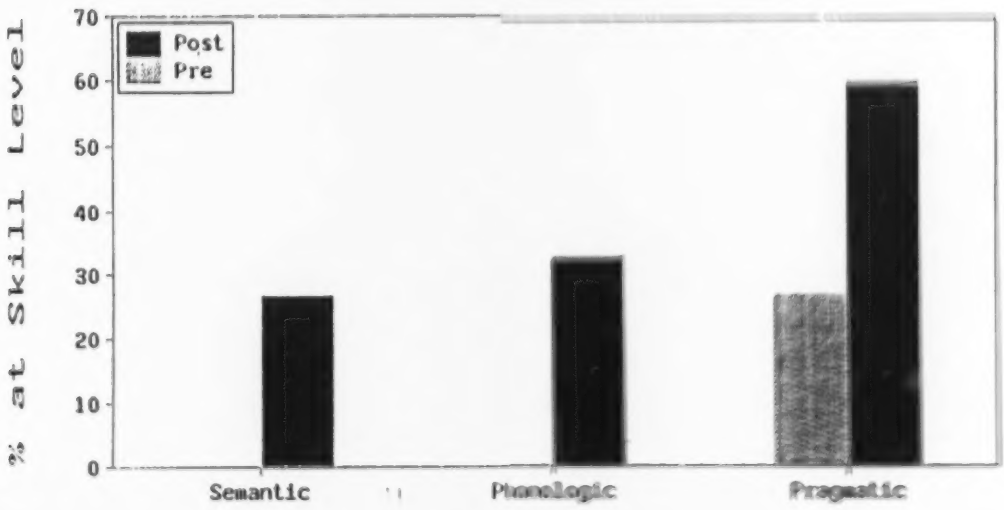
Based on Surveys of Parents and Teachers



Pre vs Post Implant Performance

Language

Based on Surveys of Parents and Teachers



Pre vs Post Performance